

What is Claimed Is:

1. A transducer, in an imaging optical system, for generating optical contrasts in the near-field representation of topographies of an object, comprising:

A a substrate having a transparent plane-parallel protuberance corresponding to a field size of the imaging optical system and pointing toward the object, wherein the ~~transducer~~^{specimen} outcouples evanescent waves from an underside of the transducer, and wherein the transducer underside is arranged in a focal plane of the imaging optical system.

2. The transducer as claimed in claim 1, wherein the imaging optical system comprises:

an objective of a reflective light microscope.

3. The transducer as claimed in claim 2, further comprising:

a dark field beam path defined, in part, by a dark field stop arranged at an exit pupil plane of the imaging optical system.

4. The transducer as claimed in claim 1, wherein the imaging optical system comprises an objective of an information write and/or read unit and the object is an optical ~~storage disk~~^{memory}.

5. The transducer as claimed in claim 1, wherein the transducer comprises a thin glass platelet substrate, and the protuberance is produced by thermal embossing.

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6. The transducer as claimed in claim 1, wherein a face of the protuberance includes a marking situated concentrically with its midpoint.

7. The transducer as claimed in claim 6, wherein the marking is located on a face of the protuberance facing the object.

8. The transducer as claimed in claim 1, wherein the transducer is optically coupled to an objective of the imaging optical system via an immersion.

9. The transducer as claimed in claim 8, wherein the immersion comprises an oil.

10. The transducer as claimed in claim 8, wherein the immersion comprises a material selected from the group consisting of a transparent elastic substance and a plastic substance.

11. The transducer as claimed in claim 1, further comprising:
a layer applied to a face of the protuberance facing the object, wherein said layer comprises a uniformly thick, flat layer made from a material which has a higher refractive index than a refractive index of the protuberance.

12. The transducer as claimed in claim 1, further comprising:
a layer applied to a face of the protuberance facing the object, wherein said layer comprises a material having a higher resistance to scratching than the protuberance.

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A 13. The transducer as claimed in claim 11, further comprising refractive ^{or diffractive} structures on the face of the protuberance facing the object in an edge region, wherein parallel light beams coming from the imaging optical system can be coupled into the coating with the higher refractive index.

14. The transducer as claimed in claim 1, further comprising:
a thin-framed plate for holding the transducer.

15. The transducer as claimed in claim 14, wherein the thin-framed plate is connected to the imaging optical system via an adjustable holder.

16. The transducer as claimed in claim 15, wherein the adjustable holder permits an alignment of the protuberance in the focal plane of the imaging optical system.

Sub c1 17. The transducer as claimed in claim 1, further comprising:
a partially transparent coating applied to a face of the protuberance facing the object, wherein the face of the protuberance facing the object is placed in an edge region.

18. The transducer as claimed in claim 1, further comprising:
a linear grating structure disposed on a face of the protuberance facing the object.

A 19. The transducer as claimed in claim 1, further comprising:
^{active light sources}
an array of ~~quantum point lasers~~ disposed on a face of the protuberance facing the object.

20. The transducer as claimed in claim 1, further comprising:

a dot structure arranged in grating-form disposed on a face of the protuberance facing the object, wherein dots forming the dot structure have lateral dimensions below a resolving power of the imaging optical system, and wherein the dots comprise a fluorescing material.

21. The transducer as claimed in claim 1, further comprising:

a point stop structure arranged in the form of a grating disposed on a face of the protuberance facing the object, wherein the stop holes comprising the point stop structure have lateral dimensions below the resolving power of the imaging optical system, and wherein the point stops are arranged as light exit openings and light entry openings for a near-field representation of the topography of the object.

22. The transducer as claimed in claim 1, further comprising:

electrically conducting layers structured by fine dividing lines to form electric capacitors from suitable contact between two respectively associated regions electrically insulated from one another that are disposed in an edge region on a face of the protuberance facing the object.

23. The transducer as claimed in claim 1, further comprising:

electrically conducting layers structured by fine dividing lines to form electric capacitors from suitable contact between two respectively associated regions electrically insulated from one another that are disposed in an edge region on a face of the protuberance facing an objective of the optical imaging system.

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24. The transducer as claimed in claim 1, further comprising:

an opaque layer, applied in an edge region to a face of the protuberance facing the object, having a plurality of windows situated symmetrically relative to one another for light exit and light entry.

25. An imaging optical system for generating optical contrasts in the near-field representation of topographies of an object, comprising:

an objective; and

A a transducer having a transparent plane-parallel protuberance corresponding to a field size of the imaging optical system and pointing toward the object, wherein the ^{object}~~transducer~~ outcouples evanescent waves from an underside of the transducer, and wherein the transducer underside is arranged in a focal plane of the imaging optical system.

26. The imaging optical system of claim 25, further comprising:

a grating structure disposed on a face of the protuberance facing the object; and

an illuminating beam defined by a light source and an illuminated field stop having a plurality of openings, wherein an arrangement of said plurality of openings correspond to and are imageable onto the linear grating structure.

27. An embossing device for forming a protuberance in a transducer, comprising:

an impressing punch that comprises a material with a larger coefficient of thermal expansion than of a housing bearing the punch, and wherein extensions of the punch and housing are coordinated with one another such that a difference

28. The embossing device as claimed in claim 27, wherein the punch tip is provided with a tubelet whose outside diameter corresponds to a diameter of the protuberance.

30. The embossing device as claimed in claim 27, wherein the punch tip comprises high-grade steel.

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